

WHAT IS CLAIMED IS;

1. An automatic analyzer comprising;

an analyzer unit to analyze the components of a specimen to be analyzed,

5 a heat insulating bath to support a reaction vessel and to hold the heat insulating medium to keep a constant temperature of liquid mixture between said specimen for analysis stored in said reaction vessel and reagent or others,

10 a controller to administer and control the entire system including said analyzer unit,

a lateral ultrasonic generator installed on the side of the reaction vessel supported by said heat insulating bath to generate lateral ultrasonic wave,

15 a lower ultrasonic generator to irradiate a lower ultrasonic wave toward the liquid level of liquid mixture from the bottom of said reaction vessel, and

an ultrasonic generator drive circuit to supply drive power to said lateral ultrasonic generator and
20 said lower ultrasonic generator.

2. An automatic analyzer as defined in claim 1, wherein

at least one of position and angle of said lower
25 ultrasonic generator is installed so that a liquid level of the liquid mixture being closer to the lateral ultrasonic generator than a center of the liquid mixture is raised higher.

3. An automatic analyzer comprising;

an analyzer unit to analyze the components of a specimen to be analyzed,

5 a heat insulating bath to support a reaction vessel and to hold the heat insulating medium to keep a constant temperature of liquid mixture between said specimen for analysis stored in said reaction vessel and reagent or others,

10 wherein the bottom is inclined with respect to said liquid mixture level to serve as an ultrasonic wave reflecting means,

a controller to administer and control the entire system including said analyzer unit,

15 an agitator installed on the side of the reaction vessel supported by said heat insulating bath, wherein

said agitator comprises multiple ultrasonic generators to generate lateral ultrasonic wave, and

20 said agitator mixes and agitates the specimen in the reaction vessel, reagent or the like;

wherein a position and angle of the bottom is provided so that a liquid level of the liquid mixture being closer to the lateral ultrasonic generator than a center of the liquid mixture is raised higher by a function of a lower ultrasonic wave reflected from the bottom of said reaction vessel toward the liquid mixture level and said lateral ultrasonic wave, and

an ultrasonic generator drive circuit to supply

drive power to said ultrasonic generator.

4. An automatic analyzer comprising;

an analyzer unit to analyze the components of a
5 specimen to be analyzed,

a reaction vessel storing the specimen for
analysis and liquid mixture with reagent or the like,
wherein the bottom is inclined with respect to said
liquid mixture level to serve as an ultrasonic wave
10 reflecting means,

a heat insulating bath to support a reaction
vessel and to hold the heat insulating medium to keep
a constant temperature of liquid mixture between said
specimen for analysis stored in said reaction vessel
15 and reagent or others,

a controller to administer and control the entire
system including said analyzer unit,

an agitator installed on the side of the reaction
vessel supported by said heat insulating bath, wherein

20 said agitator comprises multiple ultrasonic
generators to generate lateral ultrasonic wave, and

said agitator mixes and agitates the specimen in
the reaction vessel, reagent or the like;

wherein a position and angle of the bottom is
25 provided so that a liquid level of the liquid mixture
being closer to the lateral ultrasonic generator than
a center of the liquid mixture is raised higher by a
function of a lower ultrasonic wave reflected from the

bottom of said reaction vessel toward the liquid mixture level and said lateral ultrasonic wave, and an ultrasonic generator drive circuit to supply drive power to said ultrasonic generator.

5

5. An automatic analyzer according to any one of the Claims 1, 3 and 4 characterized in that the material of said ultrasonic wave reflecting means has acoustic impedance different from that of the heat insulating medium in the heat insulating bath which transmits ultrasonic wave generated from the ultrasonic generator.

6. An automatic analyzer according to any one of the Claims 1, 3 and 4 characterized in that said ultrasonic wave reflecting means has a mechanism to change the ultrasonic irradiation position and ultrasonic irradiation angle.

7. An automatic analyzer provided with an analysis means to analyze the physical properties of a specimen where said specimen and reagent poured into a reaction vessel are to be analyzed,

said automatic analyzer comprising;

an acoustic wave generation means installed outside said reaction vessel to irradiate acoustic wave toward said reaction vessel, and

a control means to control a position for

irradiation of acoustic wave by said acoustic wave generating means according to a liquid level of said specimen and reagent and physical properties of the objects to be analyzed.

5

8. An automatic analyzer according to Claim 7 further comprising a storage means to store the acoustic wave irradiation position in an associated format for each item,

10

wherein said control means refers to stored data in said storage means to determine the irradiation position in conformance to analysis item for objects to be analyzed.

15

9. An automatic analyzer according to Claim 7 further comprising a storage means to store the amount of specimen and reagent required for each item in an associated format,

20

wherein said control means refers to stored data in said storage means to calculate the liquid level of the specimen and reagent inside the reaction vessel in conformance to analysis item for objects to be analyzed, and to determine the irradiation position according to the calculated liquid level.

25

10. An automatic analyzer according to Claim 7 further comprising a receiving means to receive the command on the position for irradiation of acoustic wave by said acoustic wave generating means,

wherein said control means determines the irradiation position according to the command received by said receiving means.

5 11. An automatic analyzer provided with an analysis means to analyze the physical properties of a specimen where said specimen and reagent poured into a reaction vessel are to be analyzed,

said automatic analyzer comprising;

10 an acoustic wave generation means installed outside said reaction vessel to irradiate acoustic wave toward said reaction vessel, and

 a control means to control an angle for irradiation of acoustic wave by said acoustic wave
15 generating means according to a liquid level of said specimen and reagent and physical properties of the objects to be analyzed.

 12. An automatic analyzer according to Claim 7
20 further comprising a storage means which stores the acoustic wave irradiation intensity in an associated format for each analysis item,

 wherein said control means refers to stored data in said storage means to determine the irradiation
25 intensity in conformance to analysis item for objects to be analyzed.

 13. An automatic analyzer according to Claim 7

further comprising a storage means to store the acoustic wave irradiation intensity in an associated format for each information on reagent,

5 wherein said control means refers to stored data in said storage means to determine the irradiation intensity in conformance to the reagent to be analyzed.

14. An automatic analyzer according to Claim 7 further comprising a reading means to read the
10 information on acoustic wave irradiation intensity recorded in the reaction bottle containing the reagent before it is poured into said reaction vessel,

wherein said control means refers to the reading of said reading means to determine irradiation
15 intensity in conformance to the reagent as an object to be analyzed.

15. An automatic analyzer according to Claim 7 further comprising a receiving means to receive the
20 command on the intensity for irradiation of acoustic wave by said acoustic wave generating means,

wherein said control means determines the irradiation intensity according to the command received by said receiving means.

25

16. An automatic analyzer provided with an analysis means to analyze the physical properties of a specimen where said specimen and reagent poured into a

reaction vessel are to be analyzed,

said automatic analyzer comprising;

an acoustic wave generation means installed
outside said reaction vessel to irradiate acoustic
5 wave toward said reaction vessel, and

a control means to control at least one of a
position, an angle and an intensity for irradiation of
acoustic wave by said acoustic wave generating means
according to a liquid level of said specimen and
10 reagent and physical properties of the objects to be
analyzed.